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The Psammocharidae of Western North America

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AT HARVARD COLLEGE.

VOL. LXIII. No. 5.

THE PSAMMOCHARIDAE OF
WESTERN NORTH AMERICA.

BY NATHAN BANKS.

CAMBRIDGE, MASS., U. S. A.:
PRINTED FOR THE MUSEUM.

SEPTEMBER, 1919.

Hymenoptera-Vespoidea-Pompilidae

systematics

REPORTS ON THE SCIENTIFIC RESULTS OF THE EXPEDITION TO THE EASTERN TROPICAL PACIFIC, IN CHARGE OF ALEXANDER AGASSIZ, BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," FROM OCTOBER, 1904, TO MARCH, 1905, LIEUTENANT COMMANDER L. M. GARRETT, U. S. N., COMMANDING, PUBLISHED OR IN PREPARATION:—

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¹ Bull. M. C. Z., Vol. XLVI., No. 4, April, 1905, 22 pp.

² Bull. M. C. Z., Vol. XLVI., No. 6, July, 1905, 4 pp., 1 pl.

³ Bull. M. C. Z., Vol. XLVI., No. 9, September, 1905, 5 pp., 1 pl.

⁴ Bull. M. C. Z., Vol. XLVI., No. 13, January, 1906, 22 pp., 3 pls.

⁵ Mem. M. C. Z., Vol. XXXIII., January, 1906, 90 pp., 96 pls.

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⁸ Mem. M. C. Z., Vol. XXXV., No. 1, February, 1907, 20 pp., 15 pls.

⁹ Bull. M. C. Z., Vol. L., No. 6, February, 1907, 48 pp., 18 pls.

¹⁰ Mem. M. C. Z., Vol. XXXV., No. 2, August, 1907, 56 pp., 9 pls.

¹¹ Bull. M. C. Z., Vol. LI., No. 6, November, 1907, 22 pp., 1 pl.

¹² Bull. M. C. Z., Vol. LII., No. 1, June, 1908, 14 pp., 1 pl.

¹³ Bull. M. C. Z., Vol. LII., No. 2, July, 1908, 8 pp., 5 pls.

¹⁴ Bull. M. C. Z., Vol. XLIII., No. 6, October, 1908, 285 pp., 22 pls.

¹⁵ Bull. M. C. Z., Vol. LII., No. 5, October, 1908, 11 pp., 2 pls.

¹⁶ Mem. M. C. Z., Vol. XXXVII., February, 1909, 243 pp., 48 pls.

¹⁷ Mem. M. C. Z., Vol. XXXVIII., No. 1, June, 1909, 172 pp., 5 pls., 3 maps.

¹⁸ Bull. M. C. Z., Vol. LII., No. 9, June, 1909, 26 pp., 8 pls.

¹⁹ Bull. M. C. Z., Vol. LII., No. 11, August, 1909, 10 pp., 3 pls.

²⁰ Bull. M. C. Z., Vol. LII., No. 13, September, 1909, 48 pp., 4 pls.

²¹ Mem. M. C. Z., Vol. XLII., August, September, 1910, 323 pp., 56 pls.

²² Bull. M. C. Z., Vol. LIV., No. 7, August, 1911, 38 pp.

²³ Mem. M. C. Z., Vol. XXXVIII., No. 2, December, 1911, 232 pp., 32 pls.

²⁴ Bull. M. C. Z., Vol. LIV., No. 10, February, 1912, 16 pp., 2 pls.

²⁵ Mem. M. C. Z., Vol. XXXV., No. 3, April, 1912, 98 pp., 8 pls.

²⁶ Bull. M. C. Z., Vol. LIV., No. 12, April, 1912, 38 pp., 2 pls.

²⁷ Mem. M. C. Z., Vol. XXXV., No. 4, July, 1912, 124 pp., 12 pls.

²⁸ Bull. M. C. Z., Vol. LVIII., No. 8, August, 1914, 14 pp.

²⁹ Mem. M. C. Z., Vol. XLII., June, 1915, 397 pp., 109 pls.

³⁰ Bull. M. C. Z., Vol. LXI., October, 1917, 28 pp., 5 pls.

³¹ Mem. M. C. Z., Vol. XLVIII., July, 1919, 514 pp., 80 pls.

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No. 5.—*The Psammocharidae of Western North America.*

By NATHAN BANKS.

THE Psammocharidae, a family of fossorial Hymenoptera, long known as Pompilidae, are mostly black insects of moderate size; the females are provided with a very painful sting, doubtless as severe as that of any hymenopteron. A few species are large with bright reddish or yellowish wings, others are small, pale colored, but as a rule there is little variation in color. They are very active and not easily taken. Owing to their agility, stinging ability, and dull colors, they have been more neglected by collectors and systematists than other families of fossorial Hymenoptera.

In the past few years I have received collections from Messrs. R. W. Doane, E. P. and M. C. Van Duzee, and especially C. F. Baker; recently a large amount of Western material from Prof. J. Chester Bradley collected mostly by himself. In the M. C. Z. is much material collected by Mr. Henshaw in Washington in 1882.

Compared with the Eastern States the fauna presents more of the *Sophropompilus* and *Aporinellus*, and less of *Pseudagenia* and *Priocnemis*, but the most notable fact is the absence of red-banded black species. These are very common in the East while I have seen but one from the West (Washington).

Synopsis of Genera.

1. Claws of hind tarsi bent at right angles; antennae situate considerably above the clypeus; labrum exerted for its entire length; metanotum at base bilobed.....*Ceratopales*.
Claws not bent at right angles.....2
2. A transverse furrow on the second ventral segment (absent in some males); in the fore wings the second discoidal cell at base is right-angled, and without a distinct pocket.....3
No such furrow on the venter; in fore wings the second discoidal cell has a small pocket at base, the hind tibiae never serrate, always more or less irregularly spined.....8
3. Hind tibiae without spines or only very weak ones, never serrate; in hind wings the transverse median vein ends before the cubitus; last tarsal joint without spines beneath.....4
Hind tibiae more or less serrately spined, if (male) nearly smooth, then the transverse median vein of hind wings is not before the cubitus.....5

4. Metanotum with erect hair above.....*Pseudagenia*.
Metanotum without erect hair above.....*Ageniella*.
5. Last joint of hind tarsus without spines beneath.....*Priocnemis*.
Last joint of hind tarsus with distinct spines beneath.....6
6. In the fore wings the first recurrent vein meets the second submarginal cell before or at the basal third.....*Pepsis*.
In the fore wings the first recurrent vein meets the second submarginal cell beyond the basal third.....7
7. First recurrent vein meets the second submarginal cell close to the tip of that cell.....*Mygymia*.
First recurrent vein meets the second submarginal cell near the middle.
Cryptocheilus.
8. Pronotum longer than the mesonotum, nearly flat above, scarcely arched longitudinally, last joint of hind tarsus without spines beneath, tarsus I of female without comb of spines.....9
Pronotum shorter than the mesonotum, plainly arched longitudinally. 11
9. With two submarginal cells.....*Planiceps*.
With three submarginal cells.....10
10. Transverse vein in fore wings sloping backwards; ocelli placed unusually low.....*Psorthaspis*.
Transverse vein in fore wings normal, as also the ocelli....*Pedinaspis*.
11. Basal abdominal segment with appressed pubescence different from that on the other segments.....*Episyron*.
Without such pubescence.....12
12. Metanotum produced angularly at the posterior corners; usually but two submarginal cells.....*Aporinellus*.
Metanotum not so produced; three submarginal cells.....13
13. Metanotum transversely striate.....*Ridestus*.
Metanotum not striate.....14
14. A short impressed line or groove on posterior part of the pronotum..15
No such line or groove.....16
15. Metanotum distinctly grooved at base; upper margin of clypeus nearly evenly curved.....*Arachnophroctonus*.
Metanotum not grooved at base; clypeal suture sinuate or zigzag.
Batazonus.
16. Third joint of antennae of female barely if any longer than the first joint, spines under last joint of hind tarsus very weak.....17
Third joint of antennae plainly longer than first.....18
17. Metanotum hairy.....*Sophrhopompilus*.
Metanotum not hairy.....*Nannopompilus*.
18. Third abdominal segment hairy above as well as rest of the body and femora.....*Arachnophila* (Alaska).
Third segment not hairy above.....19
19. No spines under last joint of the hind nor front tarsi, clypeus not emarginate, third submarginal cell not petiolate.....20
Distinct spines under last joint of the hind tarsi; no malar space.....22

20. A distinct malar space between eyes and base of mandibles.....21
 No such space; metanotum not hairy.....*Gymnochaeres*.
21. A comb to front tarsi of female; metanotum oblique; small species.
Agenoideus.
 No comb; metanotum flat at base; larger black species..*Allocyphonyx*.
22. Clypeus of female strongly emarginate in middle; pronotum arcuate
 behind; a comb to front tarsi.....*Lophopompilus*
 Clypeus not emarginate.....23
23. A strong comb to front tarsus of female; metanotum hairy above.
Psammochaeres.
 No comb to front tarsus.....24
24. Metanotum not hairy above; marginal cell much more than its length
 from tip of the wing.....*Pompiloides*.
 Metanotum plainly hairy above; marginal cell more acute at tip, and
 nearer to wing tip.....*Anoplius*.

LOPHOPOMPILUS.

♀

- Four long spines in comb on first tarsal joint.....*cleora*.
 Three rather short spines, hardly forming a comb on first tarsal joint..*aethiops*.

LOPHOPOMPILUS AETHIOPS (Cresson).

Calif.: Exeter, 30 July; Washington (Kincaid).

LOPHOPOMPILUS CLEORA Banks.

Calif.: Dyerville, July, Los Angeles, 3 May; Wash.: Camp Umatilla,
 26 June, 1882.

PSAMMOCHARES.

♀

1. Pronotum arcuate behind; three spines in tarsal comb on first joint;
 larger species.....*bellicosus*.
 Pronotum angulate behind.....2
2. With three spines on first tarsal joint in the comb.....*eureka*.
 With four spines on first tarsal joint.....3
3. Spines of comb on second joint longer than that joint.....*scelestus*.
 Spines of comb on second joint shorter than that joint.....*anoplinus*.

♂

1. Pronotum arcuate behind, large species.....*bellicosus*.
Pronotum angulate behind.....2
2. Ventral segments with tufts on last two.....*eureka*.
No tufts of hair on ventral segments.....*scelestus*.

PSAMMOCHARES ANOPLINUS, sp. nov.

Type.—Cornell Univ. Coll. *Paratype* M. C. Z. 10,396.

Alberta: Medicine Lake to Jasper, 4 July (Bradley); Calif.: Lake Tahoe, 6,200 ft., 21 August, (Bradley); Oregon: Umatilla, 24 June, 1882.

♀ Black, similar to *P. scelestus* in nearly all respects; in hind tarsi the fourth joint is a little longer than in *P. scelestus*, being nearly equal to the fifth; in the fore wings the basal vein is plainly a little before the transverse. The anterior tarsus has the comb of very much shorter spines than in *P. scelestus*, the two on the second joint hardly half as long as those in *P. scelestus*; there are four short ones on the first joint, all these spines are rather stout and a trifle curved.

Length 11 mm.

PSAMMOCHARES EUREKA, sp. nov.

Type.—M. C. Z. 10,397. *Paratype*.—Cornell Univ. Coll.

Calif.: Lincoln Park, San Francisco (Giffard), Ingleside, 26 August (Bradley), Felton, Santa Cruz Mts., 15–20 May (Bradley), Lakeside, 8 May (Bradley).

♀ Black, densely long haired; clypeus broad, truncate in front, slightly margined; first joint of antennae with hair beneath, third joint quite long, second and third together equal to vertex width, groove above antennae to anterior ocellus, hind ocelli about as close to eyes as to each other, vertex from in front straight across; pronotum angulate behind; metanotum with a median groove, not very deep; legs moderately long, not very spiny, hind tibiae with only about four above, inner spur of hind tibia reaches little beyond middle of the basitarsus, three spines in comb of the first tarsal joint, the last not equal to next joint. Wings violaceous black, marginal cell hardly its length from wing tip, second and third submarginal cell subequal, both broad above, second recurrent reaching cell before the middle, basal vein a little before the transverse. Male more slender, and much smaller; the last two ventral seg-

ments before the tip have dense brushes of erect hair; the ventral plate is densely clothed with short hairs, and without the prominent carina of *P. scelestus*.

Length ♀, 9 mm.

PSAMMOCHARES SCELESTUS (Cresson).

Washington (Kincaid); Calif.: Sequoia National Park, 21-25 July, Los Gatos Divide to Mt. Diabolo, 6-8 June, Lemnecove, Tulare Co., 9 July, Mesa Grande, Russian River, 30 September, Harris, Humboldt Co., 29 June, Three Rivers, Tulare Co., 16 July, Ingleside, 25 August.

PSAMMOCHARES BELLICOSUS Banks.

Calif.: Claremont, Harris, Humboldt Co., 29 June; Wash.: Ainsworth, Camp Umatilla, Yakima River, Wenas Valley, June, July, 1882.

ANOPLIUS.

♀

1. Claw with tooth sloping toward tip of the claw, third joint of antennae very long; third submarginal cell not petiolate.....*selkirkensis*.
Claw with an erect tooth, smaller.....2
2. Third submarginal cell petiolate; abdomen elongate.....*compactus*.
Third cell not petiolate.....3
3. Fourth joint of hind tarsus nearly as long as the fifth, latter much shorter than the third.....*tarsatus*.
Fourth joint of hind tarsus plainly shorter than fifth, which is subequal to the third.....*luctuosus*.

♂

1. Third submarginal cell petiolate, the abdomen more elongate..*compactus*.
Third cell not petiolate.....2
2. The ventral plate with the carina of even height throughout or nearly so.
selkirkensis.
The ventral plate with the carina very strong on basal part, and then suddenly sloping behind.....*luctuosus*.

ANOPLIUS LUCTUOSUS (Cresson).

B. Col.: Revelstoke, Selkirk Mts., 30 June, Carbonate, Columbia River, 7-12 July; Oregon: Corvallis; Calif.: Ingleside, 25 August, Ukiah, Mendocino Co., 30 September; Wash.: Wenas Valley, Yakima River, July, 1882.

ANOPLIUS COMPACTUS (Provancher).

B. Col.: Glacier, Downie Creek, Selkirk Mts., 9 August; Calif.: Sequoia National Park, 21-25 July.

ANOPLIUS SELKIRKENSIS, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,398.

B. Col.: Downie Creek, Selkirk Mts., 14 August (Bradley).

♀ Black; densely long hairy; clypeus broad, truncate in front; no hair under first joint of antennae, third joint very long, with the second fully equal to vertex width; a groove above the antennae; hind ocelli closer to each other than to the eyes; vertex slightly convex from in front; hind margin of pronotum angulate; metanotum with a median groove; abdomen not depressed, venter and tip hairy; legs slender, spines short, those at tip of hind tibia not one half diameter of the joint; inner spur of hind tibia a little more than one half of the basitarsus; claws long, with a large tooth directed toward tip of claw (not at right angles as in most species); last joint of hind tarsus with stout spines beneath, wings dark, darker toward tips, the basal vein nearly interstitial with the transverse, marginal cell hardly its length from wing-tip, second and third submarginal cells subequal, the latter narrowed above, the recurrens end beyond middle of the cells.

Length 9 mm.

The male is much smaller, more slender, more sericeous on face and thorax, and without ventral tufts of hair.

Distinct from other western species by longer third antennal joint, and the sloping tooth of the claws.

ANOPLIUS TARSATUS, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,399.

Calif.: Sherwood, Mendocino Co., 1 July, Sugar Pine, Madera Co., 4,300-5,000 ft., August (Bradley).

♀ Blue-black; rather densely clothed with long hair, none below first joint of antennae; clypeus broad, truncate in front; groove above antennae, second and third antennal joints together fully equal vertex width; vertex, from in front, nearly straight across; hind ocelli rather nearer each other than to the eyes; pronotum angulate behind; metanotum without distinct groove; abdomen hairy on basal segment, at tip and beneath; legs long, spines moderately stout, those near tip of hind tibia fully one half the diameter of the joint, inner spur of hind tibia about three fifths of basitarsus; in the hind tarsus the fourth joint is nearly as long as the fifth, and the third is much longer than the fifth. Wings violaceous black, basal vein plainly before the transverse, marginal cell slightly more than its length from wing-tip, second and third submarginals subequal, the third much narrowed above, the second recurrent bowed outward, reaching the third submarginal cell just beyond middle.

The claws are as usual in the genus, a small erect tooth near middle.

Length 10 mm.

In appearance this is much like *A. fulgidus*, but the fourth joint of hind tarsus is much shorter in that species, the tooth on claw is nearer to the tip of claw, and the basal vein is nearly interstitial with the transverse.

POMPILOIDES.

1. The second discoidal cell hardly longer than broad; small species. 4
The second discoidal cell plainly longer than broad. 2
2. Third submarginal cell broad above. *elsinore*.
Third submarginal cell petiolate or nearly so. 3
3. Female venter hairy; ♂ inner spur hind tibia three fourths of the basitarsus; in genitalia the lateral lobes of basal piece reach much beyond the cleft median lobe. *clystera*.
Female venter smooth; ♂ inner spur hind tibia about two thirds of the basitarsus; in genitalia the lateral lobes of basal piece scarcely reach beyond the emarginate median lobe. *estellina*.
4. Abdomen wholly black; second submarginal cell subtriangular. . *angularis*.
Abdomen with red spots near base; second submarginal cell trapezoidal. . *hageni*.

POMPILOIDES HAGENI, sp. nov.

Type.—M. C. Z. 10,400.

Mont.: Weeksville, 2 August, 1882; Wash.: Camp Umatilla, 26 June, 1882.

♀ Black; abdomen with rufous above on apical part of the second segment and basal part of the third segment; wings brown; tips of the antennae and the tarsi brown. General shape of *P. marginatus*. Third joint of antennae elongate, much longer than fourth. Vertex, seen from in front, slightly convex; hind ocelli about as close to eyes as to each other. Pronotum angulate behind. Legs rather strongly spined; inner spur of hind tibia about two thirds of basitarsus. In the wings the marginal cell is nearly twice its length from apex of wing; the second submarginal cell trapezoidal, with sides of equal length, the third subtriangular, receiving the second recurrent vein beyond the middle.

Length 9 mm.

POMPILOIDES CLYSTERA Banks.

Calif.: Santa Cruz Island, 27 July, Lemnecove, Tulare Co., 9-11 July, Sugar Pine, Madera Co., 24-31 August, Jacintos Barranca, near Coalinga, Fresno Co., 4 June, Sisson, 14 August, Coyote Creek, Tulare Co., 26 June (Stanford Univ. Coll.).

POMPILOIDES ESTELLINA Banks.

Calif.: San Diego Co., 24 May (E. P. Van Duzee).

POMPILOIDES ANGULARIS Banks.

Calif.: Ukiah, Mendocino Co., 30 September, Ingleside, 25 August, Claremont.

POMPILOIDES ELSINORE, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,401.

B. Col.: Carbonate, Columbia River, 2,600 feet, 7-12 July (Bradley).

♀ Black; head and venter with fine short hairs; clypeus truncate in front, almost concave; faint line from antennae to anterior ocellus, hind ocelli nearer to each other than to the eyes; antennae not very long, third joint much longer than first, but barely longer than fourth, the second and third together not as long as vertex width; vertex from in front nearly straight across; pronotum angulate behind; metanotum short, with a median groove;

abdomen rather short; legs of moderate length, with many stout spines, inner spur of hind tibia two thirds of the basitarsus, fourth joint of hind tarsus plainly shorter than the fifth, front tarsus with very short spines, second joint with only one at tip. Wings pale, darker on tips, the marginal cell rather long, second submarginal nearly quadrate, third about as large, but little narrowed above, other veins about as usual. The male has the inner spur of hind tibia broader than usual.

Length 8 mm.

NANNOPOMPILUS.

Bluish or greenish; body short; male shows a short basal piece to genitalia with an angulate cleft, the ventral plate carinate.....*padrinus*.
Blackish; body more slender; the male shows a long slit with sinuous edges, the ventral plate not carinate.....*consimilis*.
Blackish, basal part of abdomen more or less reddish.....*rufibasis*.

NANNOPOMPILUS PADRINUS (Viereck).

Calif.: Claremont, Ukiah, Mendocino Co., 30 September, Ingleside, 25 July.

NANNOPOMPILUS RUFIBASIS (Banks).

Wash.: Olympia (Kincaid), agreeing with eastern specimens.

NANNOPOMPILUS CONSIMILIS (Banks).

Wash.: Wenas Valley, Yakima River, July, 1882; Oregon: The Dalles, 23 June, 1882.

SOPHROPOMPILUS.

♀

1. Legs noticeably hairy; four comb spines on first tarsal joint.....2
Legs barely hairy.....3
2. Tibiae with long hairs, and a few on tarsi.....*bradleyi*.
Few if any hairs on tibiae.....*tumifrons*.
3. Pronotum slightly but distinctly angulate behind.....*subangulatus*.
Pronotum broadly arcuate behind.....*parvus*.

♂

1. Head tumid about ocelli, and above the antennae; femora hairy.
tumifrons.
- Head not tumid at ocelli; femora not noticeably hairy.....2
2. Pronotum arcuate behind; posterior slope of metanotum silvery pubescent.
parvus.
- Pronotum angulate behind; posterior slope of metanotum not silvery
pubescent.....*subangulatus.*

SOPHROPOMPILUS BRADLEYI, sp. nov.

Type.—Cornell Univ. Coll.

Calif.: Giant Forest, Sequoia National Park, 6,000–7,000 ft., 21–26 July (Bradley). One ♀.

♀ Bluish, legs and antennae more black; wings not very dark, not darker at tip; body and legs densely long haired, even down on the first and second tarsal joints, most of the hairs erect, and very long. Head rather broad, clypeus truncate in front, margined, a distinct groove from antennae to anterior ocellus, hind ocelli nearer to each other than to the eyes; vertex from in front slightly convex; antennae short and heavy, third joint as long as first; pronotum broadly arcuate behind, metanotum short, rounded, with a median groove; abdomen moderately elongate, hardly depressed, hairy all over, those at the tip no longer than elsewhere; legs rather short, with numerous stout spines; tarsal comb of four heavy curved spines on the first joint, the last of which is longer than the next joint; inner spur of hind tibia two thirds of basitarsus; wings with marginal cell length from the tip, second submarginal cell nearly square, receiving the first recurrent vein near tip, the third submarginal cell short, narrowed above, receiving the second recurrent vein near its middle; basal vein bowed, a little before the transverse, in hind wings cubital fork interstitial with the end of the cell.

Length 10 mm.

SOPHROPOMPILUS PARVUS (Cresson).

Calif.: Ingleside, 25 July, Sequoia National Park, 21–26 July;
B. Col.: Carbonate, Columbia River, 7–12 July; Wash.: Yakima,
and Wenas Valleys, July, 1882.

SOPHROPOMPILUS TUMIFRONS Banks.

Calif.: San Diego Co., 14 June.

SOPHROPOMPILUS SUBANGULATUS, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,402.

Colo.: Tabernash, August (Tucker Coll.); Calif.: Ingleside, 23–26 August (Bradley); B. Col.: Beaver Mouth, Selkirk Mts., 16–20 August (Bradley).

♀ Black, abdomen bluish, similar to *S. ingenuus* in most respects, but much smaller, body not very hairy, the femora show no hairs, third joint of antennae about equal first, pronotum slightly but plainly angulate behind, metanotum with a deep median groove; inner spur of hind tibia nearly two thirds of basitarsus; the tarsal comb has the last spine of the first joint longer than the next joint, and the basal two not half their length apart (in *ingenuus* the last is not as long as next joint, and the basal two farther apart). Wings dark, but paler before the basal vein, venation about as in *S. ingenuus*.

Length 8 to 10 mm.

Differs from *S. ingenuus* by longer tarsal comb, and angulate pronotum. It differs from *S. parvus* in larger size; distinctly angulate pronotum, and in a much longer comb on female tarsi.

AGENOIDEUS.

But one species known which occurs across the northern part of North America.

AGENOIDEUS HUMILIS (Cresson).

B. Col.: Revelstoke, Selkirk Mts., 8–13 July.

GYMNOCHARES.

Two species known, the Arizonian one extending into California.

GYMNOCHARES BIEDERMANNI (Banks).

Calif.: Claremont (Baker).

ARACHNOPHROCTONUS.

1. Body uniformly yellowish.....*unicolor*.
Body more or less marked with brown or reddish brown....*ferrugineus*.

ARACHNOPHROCTONUS UNICOLOR Viereck.

Calif.: Lemoncove, Tulare Co., 9-11 July, Dulzura, San Diego Co.,
15 August, Three Rivers, Tulare Co.; Wash.: Wenas Valley, 6 July,
1882.

ARACHNOPHROCTONUS FERRUGINEUS (Cresson).

Calif.: Claremont, National City, 15 May.

APORINELLUS.

1. Legs partly reddish *californicus*.
Legs all black 2
2. Abdomen (except last two segments) wholly sericeous *completus*.
Abdomen black with sericeous bands or spots 3
3. Abdomen with complete silvery bands across apex of each segment above.
apicatus.
Abdomen without complete bands 4
4. Pronotum and pleura noticeably marked with silvery; wings dark at tips.
intermedius.
Pronotum and pleura not noticeably marked with sericeous; wings nearly
uniformly blackish *medianus*.

APORINELLUS CALIFORNICUS Rohwer.

Calif.: Alameda Co.

APORINELLUS COMPLETUS Banks.

Wash.: Yakima River, Kittitas Valley, June, July, 1882.

APORINELLUS APICATUS Banks.

Calif.: National City, 15 May, Felton, Santa Cruz Mts., 20-25
May, Berkeley, 16 September.

APORINELLUS MEDIANUS Banks.

Calif.: Ramona, 15 August, Los Angeles, May, Sequoia National
Park, 6 August, Lemoncove, Tulare Co., 9 July, El Cajon.

APORINELLUS INTERMEDIUS, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,403.

Calif.: Claremont (Baker), Owen's River, 5 August (Kennedy).

♀ Black; marked with sericeous as follows:—most of face, back of head, front of coxae, outer sides of femora and tibiae, pleura, part of the pronotum, its posterior margin very strongly so, a mark on sides of the scutellum, at apex of metanotum, and large subtriangular median spots at apex of first, second, and third abdominal segments above. Wing not very dark, but beyond the stigma it is black. Body rather heavy, but vertex not as broad as in *laticeps*; antennae longer than in that species, the second plus third joints equal vertex width; pronotum arcuate behind; inner spur of hind tibia a little more than one half the basitarsus; two or three submarginals, the third being extremely small, if present, second recurrent vein received near apex of second or at middle of third cell.

Length 7 mm.

Differs from *A. laticeps* in having the marks on abdomen triangular (instead of complete bands), and in longer antennae; it differs from *A. medianus* by the wings being dark only at tip, the sericeous marks on thorax, and in having much longer spines in the comb of front legs.

EPISYRON CALIFORNICUS Banks.

Calif.: Ingleside, 25 August, Fresno, May 5, Three Rivers, Tulare Co., 16 July, Felton, Santa Cruz Mts., 15–19 May, Claremont; B. Col.: Revelstoke, Selkirk Mts., 4–6 July (Bradley).

RIDESTUS STRIATULUS Banks.

"Calif." (Cornell Univ. Coll.).

PSORTHASPIS PLANATUS (Fox).

Calif.: Laguna Beach, Lemoncove, Tulare Co., 16 May, San Diego, 14 June.

PLANICEPS.

1. Legs not noticeably hairy, metanotum not hairy.....*luxus*.
At least front femora and tibiae hairy.....2
2. All femora and tibiae plainly hairy.....*hirsutus*.
Only front femora and tibiae hairy.....*assimilis*.

PLANICEPS LUXUS Banks.

Calif.: Washington (Kincaid), Claremont, Ingleside, August, National City, 15 May, Santa Clara Co., May; Wash.: Yakima Valley, 16 July, 1882.

PLANICEPS HIRSUTUS Banks.

Calif.: Mountains near Claremont, Pasadena, Ingleside, 26 May.

PLANICEPS ASSIMILIS Banks.

B. Col.: Penicton, 11 August, Peachland, 24 August; Calif.: Samoa Beach, Humboldt Co., 28 June.

AGENIELLA.

♂

1. Body mostly yellowish, legs wholly so. 2
Body mostly black (at least head and thorax). 3
2. Wings uniformly deep black; larger species. *coronata*.
Wings paler, darker on tips and over basal vein; smaller species. *blaisdelli*.
3. Third submarginal cell as high as long. 4
Third submarginal cell plainly longer than high. 5
4. Basal segment of abdomen slender, fully three times as long as wide at tip, slightly margined below. *subaequalis*.
Basal segment of abdomen not twice as long as broad at tip. *aequalis*.
5. Basal segment of abdomen about twice as long as broad at tip; wings nearly uniformly brown; apical segment pale. *euphorbiae*.
Basal segment plainly more than twice as long as broad at tip, broadly margined below; wings darker at tips. 6
6. Abdomen basally red; legs mostly pale; mid and front spurs white. *partita*.
Abdomen black, apical segment white; mid spurs black, legs mostly black. *praestans*.

AGENIELLA CORONATA, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,404.

Calif.: Mts. near Claremont (Baker), San Buenaventura, 18 August, Santa Rosa.

Yellowish red as in *A. blaisdelli*; a little black between ocelli, abdomen sometimes darkened (discolored) above near tip; wings violaceous black, uniformly dark throughout in both pairs. Similar to *A. blaisdelli* in structure; the pronotum behind rather angulate; legs weakly spinose; distinguished by its much larger size and uniformly darker wings.

Length 14 mm.

AGENIELLA BLAISDELLI (Fox).

Calif.: Lemoncove, Tulare Co., 9-11 July, Lompoc, 9 September, Mesa Grande, Russian River, 30 September, Glenwood, 27 May, Sugar Pine, Madera Co., 24-31 August.

AGENIELLA EUPHORBIAE (Viereck).

Calif.: Described from San Pedro (T. D. A. Cockerell).

AGENIELLA SUBAEQUALIS, sp. nov.

Type.—Cornell Univ. Coll.

Calif.: Mts. near Claremont (Baker).

♂ Black; tips of mandibles reddish; wings faintly fumose, hardly darker at tip; last segment of abdomen brownish above. Body very slender; face narrowed below, silvery sericeous on the lower part, lateral ocelli a little closer to each other than to the eyes, last joint of the antennae strongly compressed; hind margin of pronotum deeply emarginate behind, pleura and hind part of the metanotum silvery; abdomen very slender, first segment about three times as long as broad at tip, petiolate, slightly margined below toward tip. Spurs rather paler than legs, inner spur of hind tibia a little more than one half of the basitarsus. Wings rather short, marginal cell fully its length from wing-tip, third submarginal plainly higher than long, only slightly narrowed above, basal vein bowed, interstitial with the transverse, second recurrent reaches third submarginal cell beyond the middle.

Length 4 mm.

AGENIELLA AEQUALIS, sp. nov.

Type.—Cornell Univ. Coll.

B. Col.: Revelstoke, Selkirk Mts., 1 July (Bradley).

♂ Black; front tibiae and tarsi brown, spurs brown; tips of mandibles pale; wings uniformly light fumose, not darker on tips. Body slender; face rather broad, nearly as broad below as above, clypeus truncate, lateral ocelli much nearer to each other than to the eyes; posterior margin of the pronotum angulate, metanotum not strongly sericeous; abdomen broad, sessile, first segment hardly one and a half times longer than broad at tip, apical segment with short fine hairs, the inner spur of hind tibia a little more than one half of the basitarsus; third submarginal cell nearly square, but a little higher than long, and scarcely narrowed above, receiving the second recurrent at middle, basal vein bowed, much before the transverse.

Length 5 mm.

AGENIELLA PRAESTANS Banks.

Calif.: Muir Woods, 30 August, Claremont, June.

AGENIELLA PARTITA, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,405.

Calif.: Brawley, Imperial Co., 9 August (Bradley).

♂ Black, basal part of the abdomen mostly reddish or yellowish, apical segment white above, scape beneath, narrow lower margin of clypeus, and the tips of mandibles pale; legs mostly pale, front and mid spurs white; wings pale, darker on tips. Slender; face slightly narrowed below, silvery sericeous, lateral ocelli rather nearer to eyes than to each other, hind border of pronotum broadly arcuate, thorax silvery sericeous, especially pronotum, spot before wings, scutellum, metanotum and two oblique stripes on the pleura. Abdomen slender, basal segment about three times as long as broad at tip, broadly margined below, with a dark stripe above. Front legs, and femora and tibiae of the other pairs pale, the coxae may also be pale below; inner spur of hind tibiae a little more than one half of the basitarsus. Marginal cell not its length from the wing-tip, third submarginal cell much longer than high, narrowed above, receiving the second recurrent vein near middle, basal vein is interstitial with the transverse.

Length 4.5 to 5 mm.

A female from Sugar Pine, Madera Co., Calif. may belong here; it is black with a red abdomen, black legs; but the general structure is similar.

PSEUDAGENIA METALLICA Banks.

Calif.: Ramona, 15 August, Santa Clara Co., May, Blue Lake, Humboldt Co., 20-27 June, Mts. near Claremont (Baker), Claremont; B. Col.: Revelstoke, Selkirk Mts., July; Wash.: Wenas Valley, Yakima River, July, 1882.

PRIOCNEMIS.

1. Wholly black.....2
Abdomen more or less reddish.....3
2. Metanotum transversely wrinkled; clypeal margin concave...*hesperus*.
Metanotum not striate or very minutely so; clypeal margin truncate.
pompilus.
3. Head, thorax, coxae, and femora very hairy, larger species...*comparatus*.
Thorax, coxae, and femora not noticeably hairy.....4
4. Dark cloud in wing; clypeus all black; inner spur hind tibia one half of
basitarsus.....*alienatus*.
No dark cloud in wing; clypeal margin pale; inner spur of hind tibia not
one half of the basitarsus.....*placitus*.

PRIOCNEMIS COMPARATUS (Smith).

Washington (Kincaid); Calif.: Blue Lake, Humboldt Co., 20-26 June; Mendocino, San Jose.

PRIOCNEMIS ALIENATUS (Smith).

B. Col.: Revelstoke, Selkirk Mts., 4-6 July.
Eastern specimens do not differ from those from Revelstoke.

PRIOCNEMIS PLACITUS (Banks).

Calif.: Lemoncove, Tulare Co., 7-11 July.

PRIOCNEMIS POMPILUS Cresson.

Washington (Kincaid); Calif.: Felton, Santa Cruz Mts., 15-16 May.

PRIOCNEMIS HESPERUS Banks.

Calif.: Stanford Univ., 3 September.

CRYPTOCHEILUS.

1. Wings more or less yellow or reddish 2
Wings, and antennae black *atratus*.
2. Antennae yellowish 3
Antennae black 4
3. Second recurrent strongly bent; in hind wing the cubitus arises before
the end of the cell *flammipennis*.
Second recurrent only slightly curved; in hind wing the cubitus arises
beyond the end of the cell *pallidipennis*.
4. Abdomen hairy above, femora also very hairy 5
Abdomen not hairy above except at tip, femora not noticeably hairy.
terminatus.
5. Metanotum wrinkled on basal part *rugosus*.
Metanotum not wrinkled *inaequalis*.

CRYPTOCHEILUS TERMINATUS (Say).

Calif.: Claremont, Los Gatos Divide to Mt. Diablo, 6-8 June,
Coalinga, 9 June; Wash.: Yakima River, 30 June, 1882.

CRYPTOCHEILUS FLAMMIPENNIS (Say).

Calif.: Lemoncove, Tulare Co., 7-11 June.

CRYPTOCHEILUS INAEQUALIS Banks.

Wash.: (Kincaid), Camp Umatilla, 27 June, 1882.

CRYPTOCHEILUS PALLIDIPENNIS (Banks).

Calif.: Brawley, Imperial Co., 9 August.

CRYPTOCHEILUS RUGOSUS Banks.

Idaho: Lapwai, 4 August; Wash.: Wawawai, June.

CRYPTOCHEILUS ATRATUS, sp. nov.

Type.—Cornell Univ. Coll. *Paratype*.—M. C. Z. 10,406.

Calif.: Glenwood, 27 May, Lemoncove, Tulare Co., 9–11 July, Harris, Humboldt Co., 29 June, Felton, Santa Cruz Mts., 20–25 May (Bradley).

♀ Deep black, the tarsi more brown, wings violaceous. Body with short hairs, longer on the vertex, tip, and venter of abdomen. Face as broad below as above, clypeus slightly concave below, lateral ocelli very much nearer to each other than to the eyes, vertex, from in front, nearly straight across, third antennal joint one and a half times longer than first, one and a fourth longer than the fourth joint, last joint very slender. Pronotum slightly angulate behind; metanotum transversely striate, most noticeable on the sides. Abdomen slightly depressed, hair at tip rather yellowish brown. Legs slender, mid and hind tibiae with numerous short, but stout spines, inner spur of hind tibia about two fifths of the basitarsus. Wings hardly reaching beyond abdomen; marginal cell nearly its length from wing-tip, second submarginal cell little longer than broad, receiving the first recurrent vein beyond middle, the third submarginal longer than the second, not extending beyond marginal, receiving the second recurrent vein near middle, the latter evenly but not strongly curved, basal vein before the transverse.

Male is much more slender, the pronotum is plainly much longer, suggesting a *Pediaspis*, the metanotum is not distinctly striate; the lateral parts of the genitalia are densely black fringed on the outer side.

Length 8 to 14 mm.

Related to *C. idoneus* from North Carolina but latter has the metanotum not plainly striate, less violaceous wings, and slightly different venation.

MYGNIMIA.

1. Second recurrent vein nearly straight across.....*hesperina*.
2. Second recurrent vein much curved.....*ustulata*.

MYGNIMIA USTULATA (Dahlbom).

Utah: Salt Lake Co., 30 May; Arizona.

MYGNIMIA HESPERINA Banks.

Calif.: San Diego, Stanford Univ.

PEPSIS.

1. Antennae more or less reddish or yellowish.....*mildei*.
 Antennae all black.....2
2. Wings reddish.....*cinnabarina*.
 Wings yellowish.....*formosa*.

PEPSIS FORMOSA (Say).

Calif.: San Emigdio Canon, Kern Co., ♂ ♀.

PEPSIS CINNABARINA Lucas.

Calif.: Claremont, Los Angeles, Kern Co.

PEPSIS MILDEI Stål.

Calif.: Claremont, Pasadena, San Jose, San Luis Obispo.

CERATOPALES.

1. Wings black.....*nigripes*.
 Wings hyaline.....2
2. First abdominal segment almost wholly yellow above.....*stretchi*.
 First abdominal segment black, with two transverse yellow spots, some-
 times connected.....*fraterna*.

CERATOPALES NIGRIPES (Cresson).

Recorded from Washington.

CERATOPALES FRATERNA (Smith).

Oreg.: The Dalles, June, 1882; Calif.: Kern Lake, 27 July, Sonoma Co.; Wash.: Yakima River, July, 1882, Wenas Valley, July, 1882.

CERATOPALES STRETCHI (Fox).

Described from "California."

The following Publications of the Museum of Comparative Zoölogy are in preparation;—

LOUIS CABOT. Immature State of the Odonata, Part IV.

E. L. MARK. Studies on Lepidosteus, continued.

E. L. MARK. On Arachnactis.

Reports on the Results of Dredging Operations in 1877, 1878, 1879, and 1880, in charge of ALEXANDER AGASSIZ, by the U. S. Coast Survey Steamer "Blake," as follows:—

A. MILNE EDWARDS and E. L. BOUVIER. The Crustacea of the "Blake."

A. E. VERRILL. The Alcyonaria of the "Blake."

Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer "Albatross," Lieutenant Commander Z. L. TANNER, U. S. N., Commanding, in charge of ALEXANDER AGASSIZ, as follows:—

K. BRANDT. The Sagittae.

K. BRANDT. The Thalassicolae.

O. CARLGREN. The Actinarians.

W. R. COE. The Nemerteans.

REINHARD DOHRN. The Eyes of Deep-Sea Crustacea.

H. J. HANSEN. The Cirripeds.

H. J. HANSEN. The Schizopods.

W. A. HERDMAN. The Ascidians.

S. J. HICKSON. The Antipathids.

E. L. MARK. Branchiocerianthus.

JOHN MURRAY. The Bottom Specimens.

P. SCHIEMENZ. The Pteropods and Heteropods.

THEO. STUDER. The Alcyonarians.

H. B. WARD. The Sipunculids.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of ALEXANDER AGASSIZ, on the U. S. Fish Commission Steamer, "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Commanding, as follows:—

H. L. CLARK. The Holothurians.

H. L. CLARK. The Ophiurans.

— The Volcanic Rocks.

— The Coralliferous Limestones.

G. W. MÜLLER. The Ostracods.

MARY J. RATHBUN. The Crustacea Decapoda.

G. O. SARS. The Copepods.

L. STEJNEGER. The Reptiles.

T. W. VAUGHAN. The Corals, Recent and Fossil.

PUBLICATIONS
OF THE
MUSEUM OF COMPARATIVE ZOÖLOGY
AT HARVARD COLLEGE.

There have been published of the BULLETIN Vols. I. to LIV., LVI., and Vols. LVIII. to LXII.; of the MEMOIRS, Vols. I. to XXXVIII., and also Vols. XL. to XLII., XLIV. to XLVI., and Vol. XLVIII.

Vols. LV., LVII. and LXIII. of the BULLETIN, and Vols. XXXIX., XLIII., XLVII. and XLIX. of the MEMOIRS, are now in course of publication.

The BULLETIN and MEMOIRS are devoted to the publication of original work by the Officers of the Museum, of investigations carried on by students and others in the different Laboratories of Natural History, and of work by specialists based upon the Museum Collections and Explorations.

The following publications are in preparation:—

Reports on the Results of Dredging Operations from 1877 to 1880, in charge of Alexander Agassiz, by the U. S. Coast Survey Steamer "Blake," Lieut. Commander C. D. Sigsbee, U. S. N., and Commander J. R. Bartlett, U. S. N., commanding.

Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer "Albatross," Lieut. Commander Z. L. Tanner, U. S. N., commanding, in charge of Alexander Agassiz.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., commanding.

Reports on the Scientific Results of the Expedition to the Eastern Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from October, 1904, to April, 1905, Lieut. Commander L. M. Garrett, U. S. N., commanding.

Contributions from the Zoölogical Laboratory, Professor E. L. Mark, Director.
Contributions from the Geological Laboratory, Professor R. A. Daly, in charge.

These publications are issued in numbers at irregular intervals. Each number of the Bulletin and of the Memoirs is sold separately. A price list of the publications of the Museum will be sent on application to the Director of the Museum of Comparative Zoölogy, Cambridge, Mass.